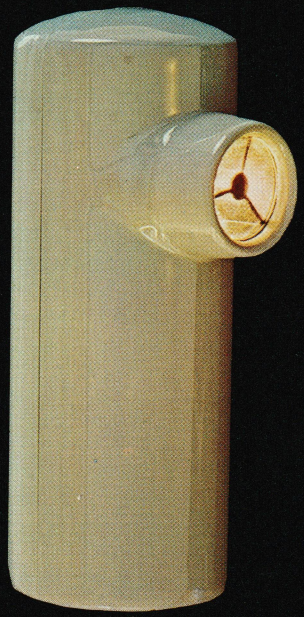
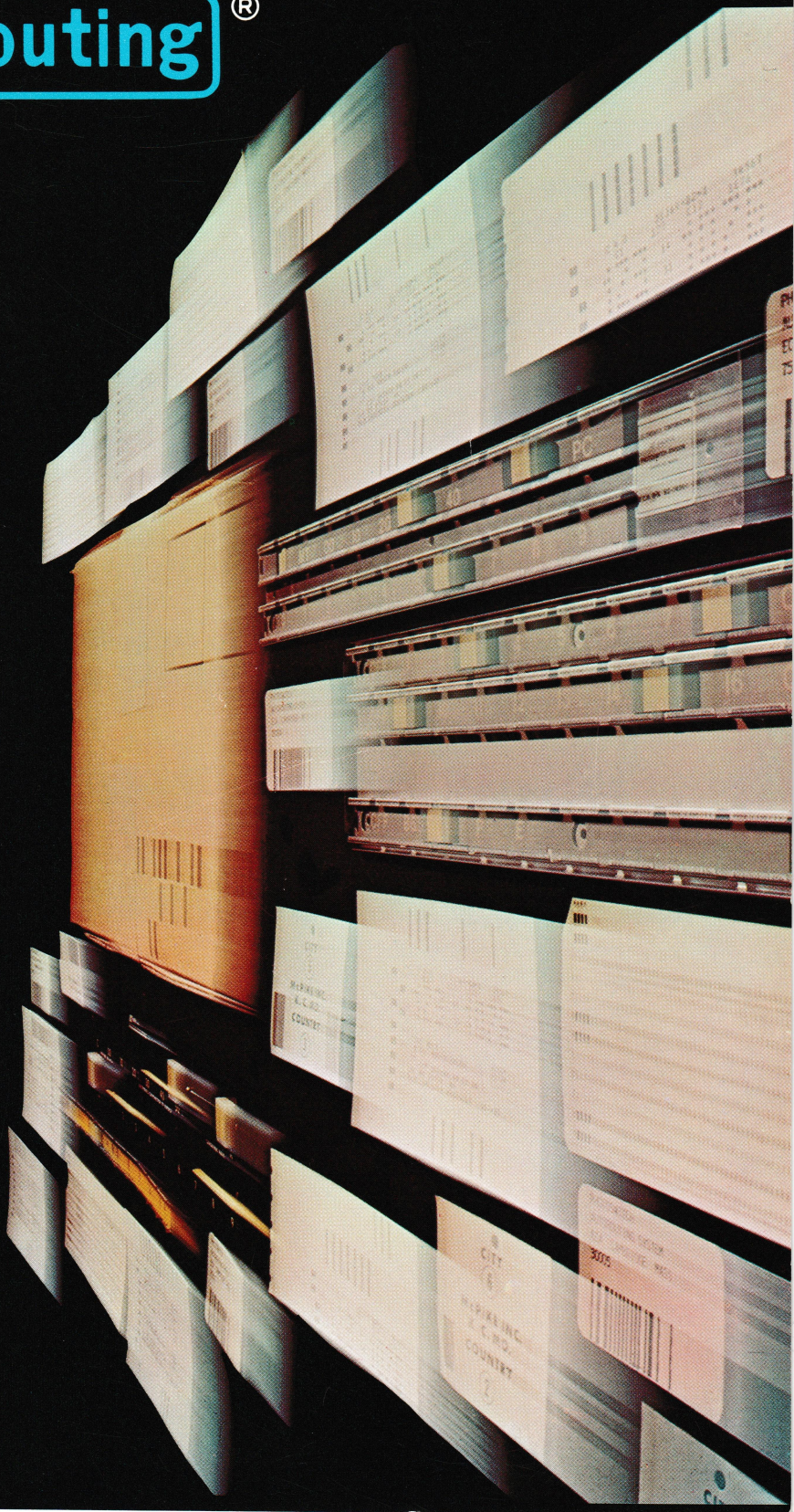
PHOTOSWITCH autorouting®

The New Key to Modern Material Management





For many years, Photoswitch has served the industrial market on a worldwide basis through the development and sale of high quality electronic controls.

As industry's need for efficiency grows, Photoswitch continues to expand its important role in the design of controls for automating materials handling equipment and systems.

The Photoswitch Autorouting® System
assists industry to lower the high cost of physical distribution caused by — the ever-changing patterns in the market — the demand for better customer service — competitive pressures — the impact of data processing — the centralization of distribution — the increasing shortage of skilled labor.

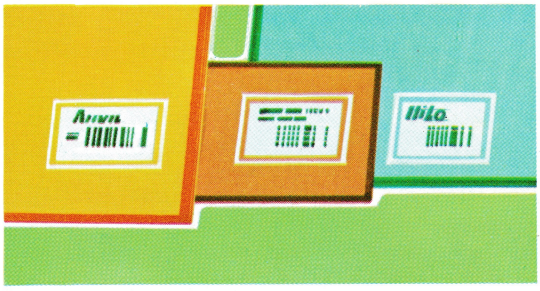
What Autorouting is
AUTOROUTING is a standardized system of coding, code reading and programmable processing devices designed to provide the necessary interface for control and accounting of physical distribution functions.

Characterized by its unique building block concept which employs multiples of standard components, AUTOROUTING systems can easily be tailored to meet selected specific control and/or data logging requirements at minimum cost.

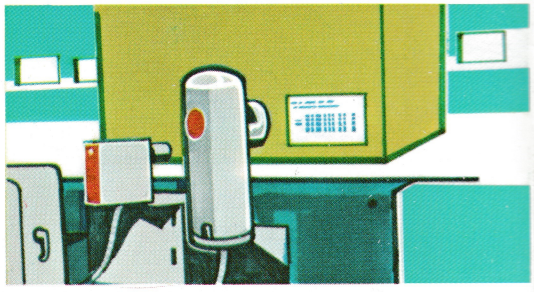
Where Autorouting Systems are Used
AUTOROUTING systems provide a means of managing material movement, inventory and control in manufacturing, warehousing, processing, transportation and administrative applications.

1. Autorouting Code Format

2. Code Label on Boxes



3. Reading Station



The Autorouting Code Format:

AUTOROUTING uses a machine readable binary code for product identification.

The code format has been designed for impact printing, but can be generated by ink jet and electrostatic processes, as well.

The code can be generated by an equivalent to an IBM 1403 line printer, or by a smaller high speed printer.

Codes can also be preprinted directly on containers, as colored marks on lighter contrasting backgrounds, or generated on punch cards against a retroreflective background.

The code format provides the highest density of information possible. The binary code is expandable from 8 to 64 bits with overall code length of 1½″ (4 cm) to 7″ (18 cm) respectively.

This compact format means smaller labels, lower label cost and less space taken on the container.

The Autorouting Reading Stations:

A reading station consists of two major components: Code Reading Scanner and Local Controller for signal conditioning and information transmission.

A "gating" device senses the presence of an object entering the field of view and activates the reading station.

Where the signal must be transmitted for distances of more than 50 feet (15 meters) and up to 3000 feet (915 meters) an AUTOROUTING Remote Controller should be included in the system.

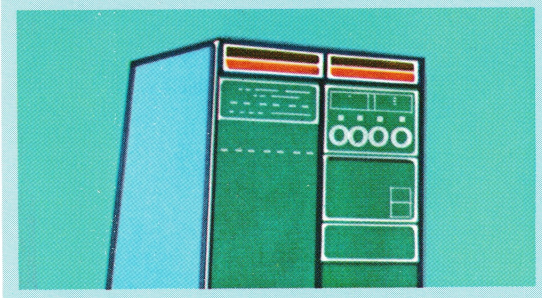
AUTOROUTING reading stations are designed for industrial environments. Their scanners can function where oil, water, dust and other contaminating conditions prevail.

Stations are not affected by power line transients and EMI (electromagnetic interference).

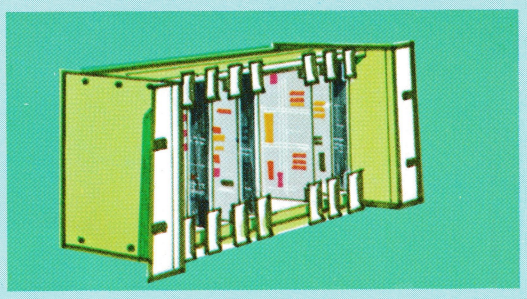
They have no moving parts to cause mechanical failures.

The scanner light source is a long-life incandescent lamp which does not present any potential OSHA problem.

4. Programmable Processor



5. Remote Controller



6. Input/Output Station

Code reading stations are easy to install and operate—specialized knowledge of solid state electronics or computer programming is not needed.

Their modular design offers easy system expansion and addition of control functions as required.

Once familiar with one reading station, maintenance personnel can easily service and maintain all reading stations.

Continuous diagnostics built into the controller automatically verify the code and immediately identify any errors.

The Autorouting Programmable Processor
This central computing unit for the control system uses a modular construction concept for maximum system design flexibility. The basic component is a PDP 11/05 computer with 8K word memory. The UNIBUS architecture provided by this system allows the user extreme flexibility in building his system.

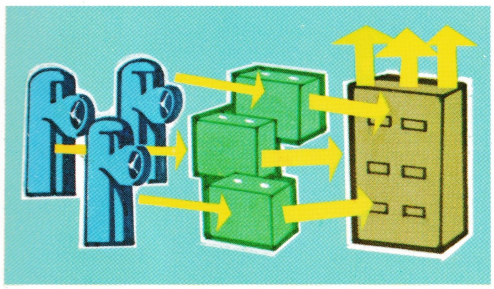
As the system expands, it's possible to add as many satellite stations as necessary. To add more memory to increase the data base, the user merely adds on the required module.

Photoswitch Autorouting Software
PHOTOSWITCH has pioneered a new approach to systems software for material handling systems. This is Structured Programming, or Modularization of software.

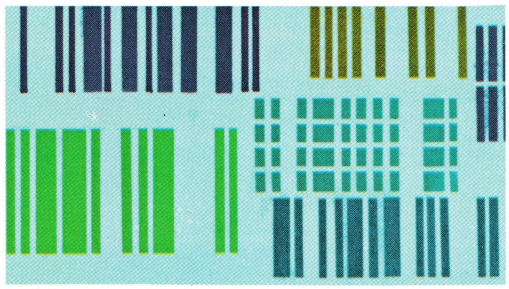
In most cases, there is a great deal of similarity in functions from one system to the next. Our approach is to modularize these similar functions and supply them as tested software. Thus 90% of each "new" system does consist of these modules assembled for specific requirements. The customer realizes a savings in cost and increased reliability through the use of these tested modules.

Photoswitch engineers have an extensive background in solving all kinds of material handling problems. Plan now to explore your particular needs with them and see how an AUTOROUTING System can provide a new concept in your material management requirements.

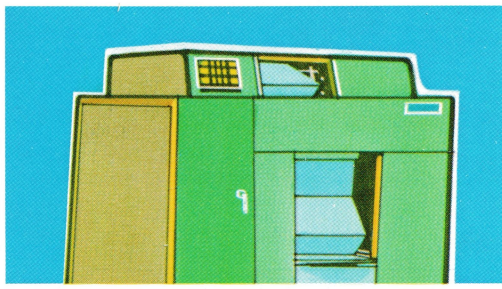
7. Three Station Switching



8. Code Examples



9. Impact Code Printer



Photoswitch Systems Division
Electronics Corporation of America
One Memorial Drive
Cambridge, Mass. 02142
Attn: Director of Sales

I am interested in the Photoswitch AUTOROUTING Material Management System.

☐ Please send me technical details on the system.
☐ Have your technical sales representative call.
☐ My need is immediate.
☐ At the moment, I want this for information purposes only.
☐ I have a specific application need. It is _____

_____

Name_____ Title_____

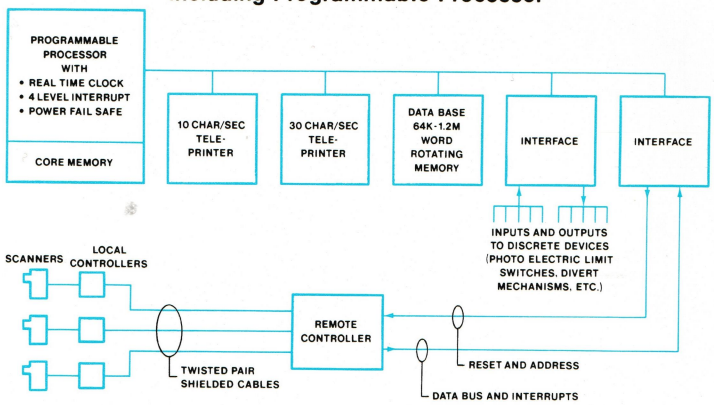
Company_____

Address_____

City_____ State_____ Zip_____ Phone_____

BLOCK DIAGRAM OF TYPICAL AUTOROUTING SYSTEM

Including Programmable Processor



Autorouting® System Computer Configuration

Processor	PDP 11
Data Storage	
Core Memory	1K-28K Words
Bulk Memory	(Disk or Mag Tape) if required
Word Size	16 Bits
Useable Peripherals	Teleprinter Paper Tape (High Speed Punch and Reader) Punched Card Reader Magnetic Tape (Unlimited Storage) Disk (up to 2 million words) Line Printer CRT Displays
I/O System	If needed

Autorouting® Code Reading Specifications

Reading Speed	10 to 1200 FPM (3 to 365 meters/min.)
Code Format	ECA Standard
Code Type	Vertical Bar (delta position)
Code Color	All colors including black on light background
Data Capacity per Code	Up to 64 Bits (or 16 BCD digits)
Code Preparation	Line Printer (1403 type) High Speed Printer (moving head type) Pre-printed Labels Pre-printed Cartons Punched Cards (over reflective material) Retroflective Material
Reading Range	2-14 inches (5 to 35.5 cm) (contrasting bar on light background) 0-10 feet (0 to 3 meters) (retroreflective materials)
Skew (Yaw)	±15°
Code Tilt (Pitch)	±10°
Vertical Code Tilt (Roll)	±30°
Controller Location	Up to 3000 ft. (915 meters) from scanner (connected by twisted pair shielded cable)
Input/Outputs	See data sheets on local and remote controllers

Autorouting® System Functions

Physical Handling	Receiving Identification Weighing Routing and Sorting Storage Accumulation Shipping
Accounting	Inventory Control Reorder Point Control Order Entry Reports Data Processing Inventory Invoicing
Control Console	As required for each application
System Software	ECA Library

The various elements which make up an AUTOROUTING® System have been designed using standard available components to permit expansion without technical obsolescence of any of the previously installed equipment. Expansion can be from a simple one station locally controlled system to a complex computer controlled system.

If you have Materials Handling System problems to solve—return this reply card to Photoswitch. Our experts will call on you personally to answer your questions and show you what our system can do for yours.

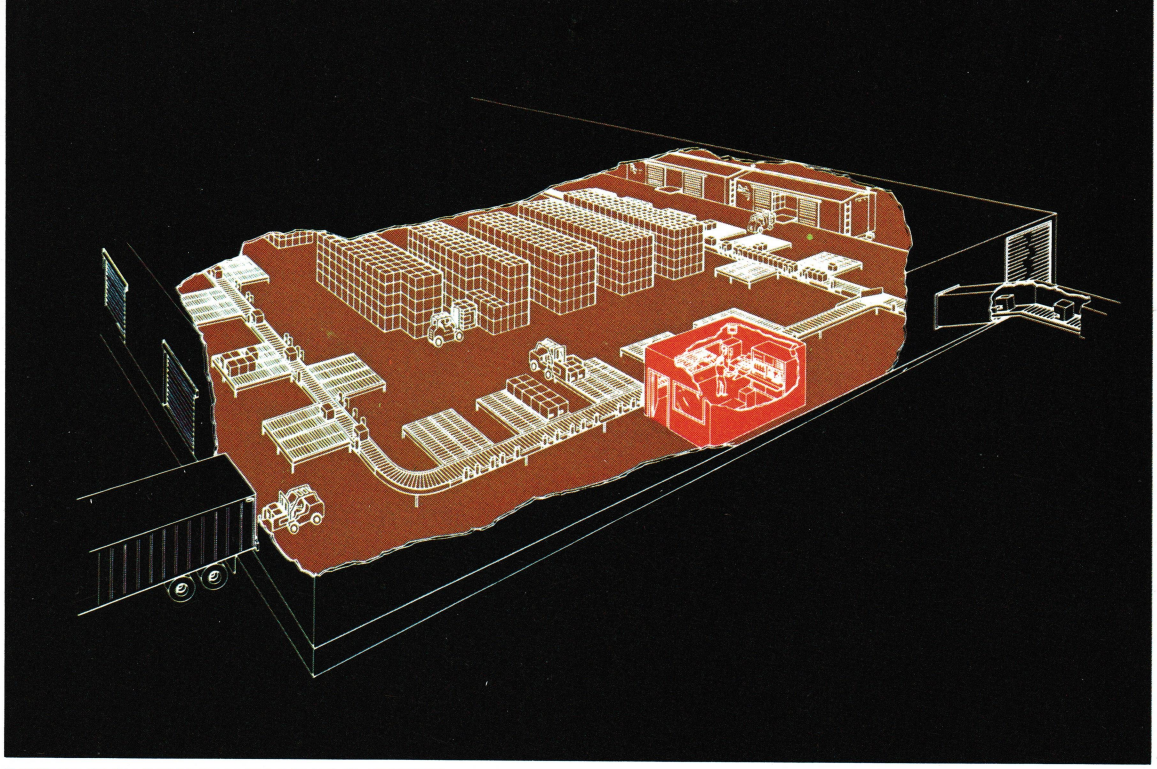
First Class
Permit No. 22818
Boston, Mass.

BUSINESS REPLY MAIL | No postage stamp necessary if mailed in the United States

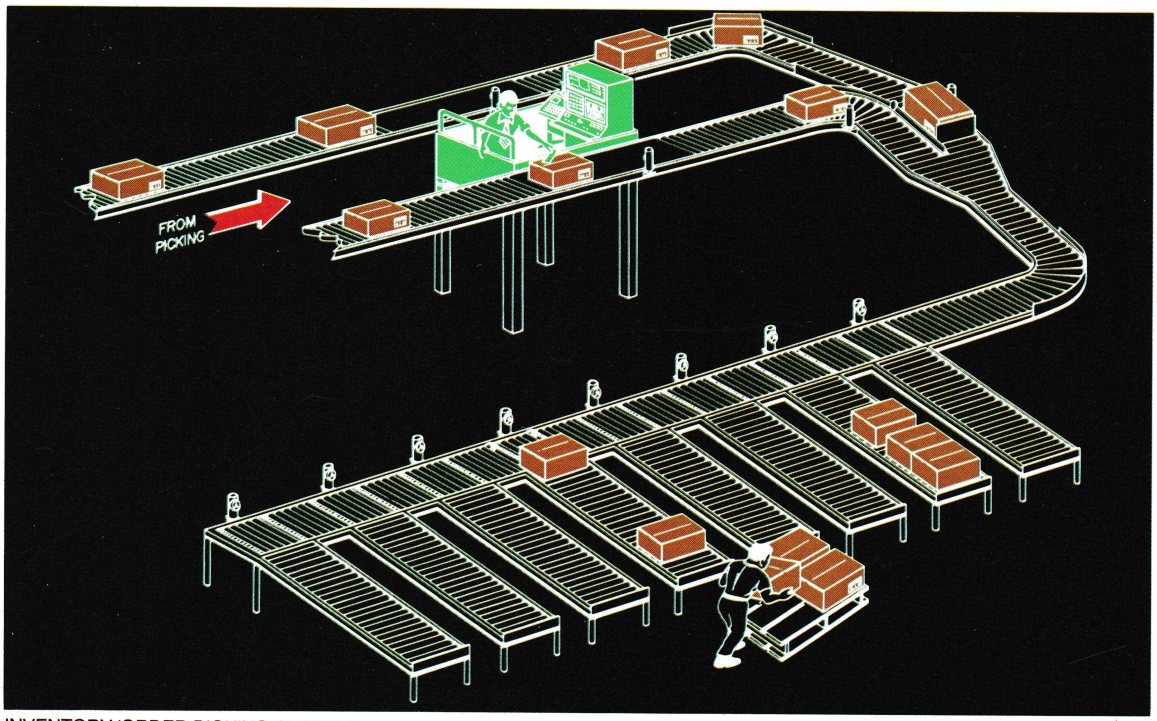
Postage Will Be Paid By

PHOTOSWITCH SYSTEMS DIVISION
Electronics Corporation of America
One Memorial Drive
Cambridge, Massachusetts 02142

ATTN: DIRECTOR OF SALES



DISTRIBUTION CENTER AUTOROUTING SYSTEM automatically handles both incoming and outgoing shipments with full facility for inventory, order breakdown, record update, etc.



INVENTORY/ORDER PICKING SYSTEM is expandable as to number of delivery stations. AUTOROUTING provides fast and simple control of all aspects for inventory update, order fulfillment and shipment.

ELECTRONICS CORPORATION OF AMERICA
PHOTOSWITCH SYSTEMS DIVISION
One Memorial Drive – Cambridge, Massachusetts 02142
(617) 864-8000

Area Sales Offices: BOSTON • NEW YORK • PHILADELPHIA • ATLANTA • CLEVELAND • DETROIT • CHICAGO • HOUSTON • LOS ANGELES • SAN FRANCISCO

Subsidiaries: ECA (CANADA) LTD. • ECA (EUROPE) N.V. • ECA (FRANCE) S.A. • ECA (GREAT BRITAIN) LTD. • ECA (NEDERLAND) B.V. • ECA (DEUTSCHLAND) G.m.b.H. • ECA (ITALIA) S.p.A.